

REMARKS

The specification has been amended to identify information relating to the international application and priority application of the present application.

Certified English translations of Japanese patent application Nos. 2002-254201 filed August 30, 2002, and 2002-377241 filed December 26, 2002, are submitted herewith for the purpose of perfecting applicants' claim to priority under 35 U.S.C. § 119.

Claim 1 has been amended to include the limitation of claim 2 and claim 2 has been canceled. Claim 1 has also been amended to include the limitations that the fiber is produced by a melt-spinning method, which is supported, for example, by the description in paragraph [0081] of the specification of the present application, and the fiber has a single fiber fineness of 0.1 to 100 dtex, which is supported, for example, by the description in paragraph [0159].

Claim 25, which is not rejected in the Action, has been rewritten in independent form to place it in condition for immediate allowance.

Prior to discussing the rejections of the claims, applicants would like to note the following regarding the fiber of the present application as defined in amended claim 1.

Polylactic acid fiber as claimed in claim 1 is characterized in that it is produced by a melt-spinning method and has a single fiber fineness of 0.1-100 dtex.

In the carrying out of melt spinning of a fiber having such a small single fiber fineness, if foreign matter is permitted to exist in the melt polymer, nozzle clogging tends to occur when the melt-polymer passes through spinnerets, giving rise to yarn cut. Thus, before the melt polymer is spun through spinnerets, the melt polymer is passed through a filtering layer of very fine mesh in order to remove foreign matter. Due to the requirement for filtering in melt-spinning, the polymer is maintained in a molten state at a high temperature for a long residence time during the time between melting and spinning through spinnerets.

In contrast, in the cases of a forming a molded product such as a film produced by extrusion molding or injection molding, the process can be carried out even if minute foreign matter exists in the material polymer, so that no filter layer, i.e., filtering, is provided in the production system. Thus, the polymer is not in a molten state during a long residence time, and the thermal history of exposure to a high temperature is much shorter in the case of such product as compared with the case of the fiber having a small single fiber fineness and produced by melt-spinning. For this

reason, additives used in the forming of a molded product such as a film by extrusion molding or injection molding cannot be reasonably expected to exhibit the same properties and characteristics when used in the melt spinning of fibers having a small single fiber fineness.

Regarding the fatty acid bisamide and/or alkyl-substituted fatty acid monoamide defined in claim 1, the reactivity of the amide is relatively low as compared to other general fatty acid monoamides, and reaction of the fatty acid bisamide and/or alkyl-substituted fatty acid monoamide with the polylactic acid in or during melt-spinning rarely occurs. Additionally, the fatty acid bisamide and/or alkyl-substituted fatty acid monoamide has(have) a remarkable heat resistance, so that according to the claimed invention, not only is it possible to lower a surface friction coefficient of polylactic acid fiber but it is also feasible to provide a high quality fiber which does not present a tincture of yellow by setting the b^* value to be in the range of -1 to 5.

Referring now to the rejections in the Action, Claims 1 to 9, 26 to 28 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishimura (JP 2001-131827 and its English translation).

Nishimura discloses the production of a flat yarn by longitudinally slitting a uniaxial-stretch film produced by extrusion. Thus, the flat yarn of Nishimura is not a fiber produced from a polymer material having a long thermal history as is experienced by the polylactic acid fiber produced by melt-spinning according to amended claim 1. Moreover, because the flat yarn has a large fineness, it does not have the problems of a lowering of wear resistance and/or of color tone.

Paragraph [0013] of Nishimura describes that fibrillation occurs in connection with a fiber having a fineness of less than 500 dtex. Since, as is clear from this description, the fatty acid lubricant used in Nishimura cannot prevent fibrillation from occurring in connection with a fiber having a fineness smaller than 500 dtex, the use of a fatty acid lubricant would not have been reasonably expected to prevent fibrillation of a polylactic acid fiber having a single fiber fineness of 0.1-100 dtex as now required in claim 1 of the present application.

Also, the only fatty acid amide based lubricant used in the examples of Nishimura is erucic acid amide. The erucic acid amide is not a "fatty acid bisamide and/or alkyl-substituted fatty acid monoamide" as required in claim 1 of the present application.

Removal of the 35 U.S.C. § 102 rejection of claims 1 to 9, 26 to 28 and 31 as being anticipated by Nishimura is in order.

Claims 1 to 11, 26, 29 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Obuchi (U.S. Patent No. 6,417,294)

Obuchi does not disclose a melt-spun polylactic acid fiber containing a fatty acid bisamide and/or alkyl-substituted fatty acid monoamide and having a single fiber fineness of 0.1 to 100 dtex and does not disclose a fiber having a b^* value in fiber color system of $L^*a^*b^*$ in the range of -1 to 5. Obuchi, therefore, also does not support a case of anticipation under 35 U.S.C. § 102 and removal of the 35 U.S.C. § 102 rejection of the claims over Obuchi is in order.

Claims 1 to 11, 16, 19 to 21, 23 and 26 to 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tan (WO 02/12395, with U.S. Patent No. 6,710,135 used as an equivalent English language document) in view of Nakata (WO 99/063001, with U.S. Patent Application Publication No. 2002/0094444 used as an equivalent English language document).

Tan discloses processing a polylactic acid based resin composition comprising polylactic acid and polyalkylene carbonate into molded articles such as films, non-woven fabrics and yarns.

Tan discloses a lubricant as an additive. However, Tan fails to disclose specific compounds useful as the lubricant.

Nakata discloses molded objects of biodegradable or disintegrable polyester resin composition and discloses bisamides of fatty acids and monoamides of fatty acids as possible lubricants. However, the disclosure in Nakata is a mere listing of various compounds useful as lubricants in the polyester resin compositions disclosed therein, i.e., for the prevention of blocking of films.

No motive is provided by the combination of Tan and Nakata to prepare a polylactic acid fiber having a single fiber fineness of 0.1-100 dtex by a melt spinning method and to add thereto a fatty acid bisamide and/or alkyl-substituted fatty acid monoamide in an amount of 0.1 to 5 weight % in relation to the whole of fiber. The combination of Tan and Nakata is insufficient to provide a person of ordinary skill in the art with a reasonable expectation of success, as required under 35 U.S.C. § 103(a), of such modification.

Removal of the 35 U.S.C. § 103(a) rejection of claims 1 to 11, 16, 19 to 21, 23 and 26 to 31 over Tan in view of Nakata is also in order and is respectfully solicited.

Claims 1 to 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kolstad (U.S. Patent No. 6,114,495) in view of Nakata.

Kolstad indicates that polylactic acid resin compositions may contain fatty acid esters, amides metal salts and so forth as internal lubricants. In Kolstad, such lubricants are added for prevention of blocking of film. The description in the examples of Kolstad of the use of lubricants is limited to the use of stearic acid in the formation of film. Kolstad completely fails to teach that an improvement in or relating to the wearing resistance, passability through processing steps and the color tone of polylactic acid fiber can be improved by the addition thereto of a fatty acid bisamide and/or alkyl-substituted fatty acid monoamide.

The deficiencies of Nakata are discussed above.

In view of these deficiencies, the combination of Kolstad and Nakata also fails to provide a person of ordinary skill in the art with a motive to modify Tan as proposed in the Action and fails to provide such person with a reasonable expectation of success, as required under 35 U.S.C. § 103(a), of such modification.

Removal of the 35 U.S.C. § 103(a) rejection of claims 1 to 11, 16, 19 to 21, 23 and 26 to 31 over Tan in view of Nakata is also in order and is respectfully solicited.

Claims 12 to 20, 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over various combinations of Nishimura, Obuchi, Kolstad, Tan, Anderson (U.S. Patent No. 4,009,513) and Yamakita (U.S. Patent Application Publication No. 2003/0079297). The propriety of these rejections depends on the rejection of claim 1, upon which claims 12 to 20, 22 and 24 depend directly or indirectly. Since claim 1 has been shown to be patentable, claims 12 to 20, 22 and 24 are patentable.

A notice of allowability of the claims is believed to be in order and is respectfully requested.

The foregoing is believed to be a complete and proper response to the Office Action dated January 3, 2007, and is believed to place this application in condition for allowance. If, however, minor issues remain that can be resolved by means of a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number indicated below.

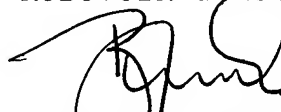
In the event that this paper is not considered to be timely filed, applicants hereby petition for an appropriate extension of time. The fee for any such extension may be charged to our Deposit Account No. 111833.

PATENT APPLN. NO. 10/525,092
RESPONSE UNDER 37 C.F.R. §1.111

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In the event any additional fees are required, please also
charge our Deposit Account No. 111833.

Respectfully submitted,
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Attachments: Certified English translations of Japanese patent
application Nos. 2002-254201 filed August 30, 2002,
and 2002-377241 filed December 26, 2002